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**TOWARDS JOINT PROGRAMMING IN RESEARCH :
Working together to tackle common challenges more effectively**

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Introduction

Investing in research today ensures a better tomorrow, both for ourselves and for future generations. Europe not only needs to invest more in research, but also needs to invest it to better effect, if it is to achieve its declared vision: a balanced and sustainable development, marrying economic growth and competition with high levels of quality of life and the environment we live in, and ensuring an effective EU for the benefit of citizens in all Member States.

The Lisbon Strategy recognised this by setting as its most urgent objective the transition to a knowledge-based society - with science, technology and innovation at its heart - and by calling for more and better investment in research. Europe must renew its efforts if it is to succeed. Above all, it must be prepared to think courageously and innovatively about how it organises its research.

This Communication sets out an ambitious new approach for making better use of Europe's limited public R&D funds through enhanced cooperation. The new initiative it proposes – namely Joint Programming – marks a change in European research cooperation. Joint Programming offers a voluntary process for a revitalised partnership between the Member States based on clear principles and transparent high-level governance. By enhancing cooperation among those that develop and manage research programmes, it aims to increase the efficiency and impact of national public research funding in strategic areas. Joint Programming targets public research programmes first and foremost, which means public-public cooperation. Hence it differs in nature from the public-private cooperation embodied in initiatives such as Joint Technology Initiatives¹. Nonetheless, industry – and other stakeholders - should play a role in the consultative process and in the implementation of specific Joint Programming Initiatives. They are also important beneficiaries of Joint Programming.

Joint Programming has the potential to become a mechanism that is at least as important as the Framework Programmes in the European research landscape, and to actually change the way in which Europeans think about research. In proposing this new approach, this Communication is an explicit response to the repeated calls for more and better Joint Programming which have emanated from the European Council, the Council and the European Parliament over the past years². It also responds to stakeholders' demands for a

¹ To be noted : Joint Technology Initiatives implemented in the ICT area (ENIAC and ARTEMIS, in the areas of nanoelectronics and embedded computer systems, respectively) leverage industry, Community and national public funds.

² See the Impact Assessment accompanying this Communication.

voluntary, bottom-up approach combined with strategic European-level guidance and their rejection of a "one-size-fits-all" method.

In this context, the European Strategic Energy Technology Plan (SET-Plan)³ provides a pilot experience in addressing a major European societal challenge together. An integral pillar of Europe's Energy and Climate Change policies, the SET-Plan aims to accelerate the development and deployment of low carbon technologies through a coherent set of actions, including Joint Programming.

This Communication is one of the five policy initiatives planned by the Commission in 2008 as a follow-up to the Green Paper on "The European Research Area: New Perspectives"⁴. It relates in particular to the dimension "Optimising Research Programmes and Priorities" and is a further step in the creation of a 'fifth freedom' by removing barriers to the free movement of knowledge.

1. THE NEED FOR A NEW APPROACH TO COOPERATION BETWEEN MEMBER STATES IN THE FIELD OF RESEARCH

Science and technology must be made to count in tackling Europe's major societal challenges⁵

How Europe responds to a number of major societal challenges will shape its future in the decades to come. These challenges include sustaining Europe's prosperity in the face of increased global competition; dealing with the needs of its ageing population and the challenges of immigration; and stimulating sustainable development, especially in the context of climate change, securing the supply of energy, preserving human and environmental health, ensuring food quality and availability as well as safeguarding citizen security.

At the same time, European citizens increasingly expect solutions to these challenges to be found through science and technology.

Our non-European partners – both traditional (US, Japan) and emerging (China, India, etc.) - have got the message. They are launching large-scale targeted research programmes and collaborate with each other. Europe and its Member States need to develop a stronger and more coordinated and coherent response to these challenges, where appropriate in collaboration with international partners.

Compared to its main partners, Europe is still under-investing in research, and R&D spending - by both the public and the private sector - has generally stagnated over the past decade. If it

³ COM(2007)723 of 22.11.2007

⁴ Besides this Communication, the Commission adopted this year:
- A Recommendation "on the management of intellectual property in knowledge transfer activities and Code of Practice for universities and other public research organisations", COM(2008)1329 of 10.4.2008;
- A Communication "Better careers and more mobility: a European partnership for researchers", COM(2008)317 of 23.5.2008;
- In addition, it is preparing a Council Regulation on a "Community legal framework for a European Research Infrastructure (ERI)" and a Communication on "A strategic European framework for international science and technology cooperation".

⁵ This concept covers economic, social and environmental challenges.

is unable to increase its spending quickly and substantially, Europe has to find new and more innovative ways to use its scarce R&D resources more efficiently and effectively. To increase the societal returns and benefits from public R&D funds, Europe should also reinforce its capacity to transform research results into societal and economic benefits, notably through the innovative capacity of European industry as well as through fostering demand for the resulting innovations⁶.

The benefits missed because of compartmentalised research

In recent years, Member States and the Community have taken many initiatives to boost the impact and efficiency of public research. Yet one of the most obvious causes of sub-optimal returns to R&D has not been addressed sufficiently: namely the lack of collaboration and coordination between national public R&D programmes. Stakeholders have long recognized this as a weakness of the EU R&D system. However, despite efforts in recent years to address this problem, Europe's research landscape remains deeply compartmentalised.

Today, 85% of public R&D is programmed, financed, monitored and evaluated at national level, with too little collaboration or coordination between countries. Less than 6 percent of total R&D investment and only 15 percent of European publicly financed civil R&D (of which 10 percent is accounted for by intergovernmental organisations and schemes, and 5 percent by the Framework Programme) is financed in a cross-border collaborative manner.

The issue is not that all research programming should be carried out in a collaborative manner and that purely national programming should be discontinued. National programming has its place in the European research landscape, especially where it addresses national needs and priorities, and where the cooperation at European level would not create advantages of significant scale and scope.

Rather the issue is that, in areas of strategic importance for the whole or a large part of Europe, the fragmentation of public research programming leads to sub-optimal returns and is costing Europe dearly, as well as preventing it from realising its societal objectives:

- National research programmes may unnecessarily duplicate each other from a pan-European perspective and lack the required programme scope and depth.
- The multitude of national procedures complicates cross-border programmes and discourages internationally-oriented research actors from accessing research funding across borders.
- The lack of cross-border programme collaboration makes it difficult to address common challenges jointly, complicates the pooling of data and expertise scattered across Europe, hinders cross-border researcher mobility and training, and slows down the international dissemination of research results.
- Crucially, it also hampers pan-European strategic research agenda-setting and horizontal policy coordination.

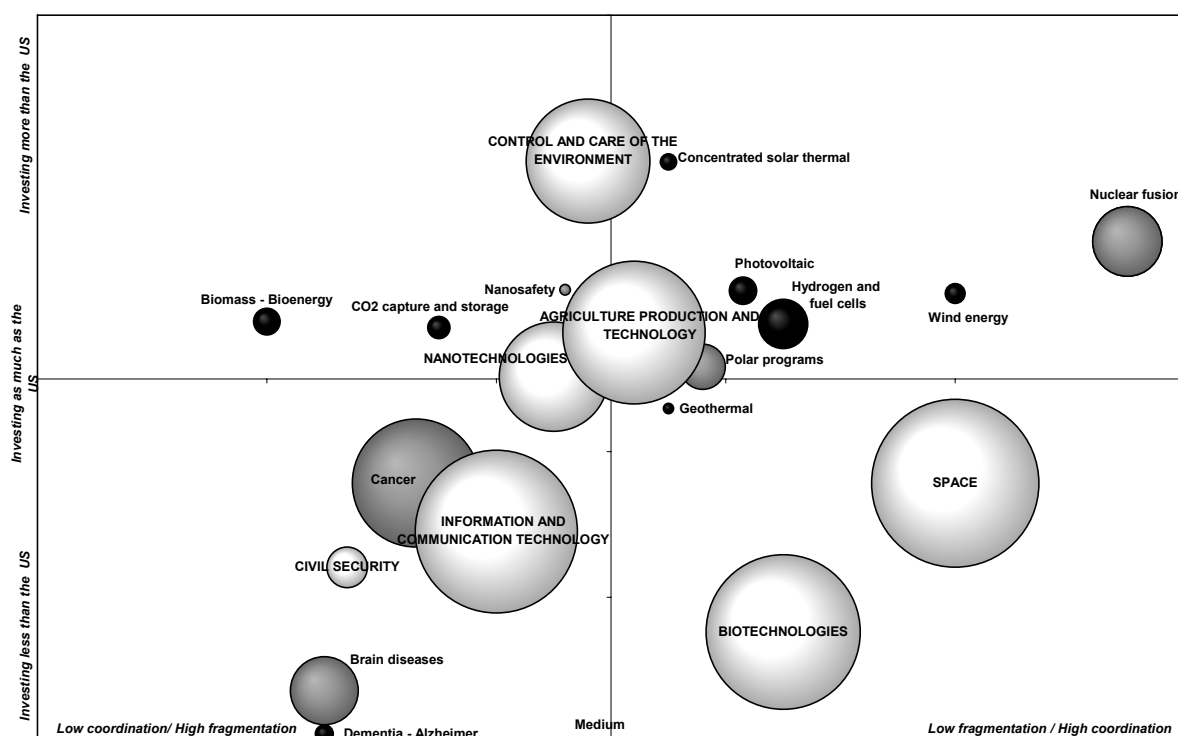
⁶ Creating an Innovative Europe, report of group chaired by Esko Aho to the Commission, January 2006

Box 1: A scattered public research in the European Research Area.

S&T fields differ hugely in terms of, for example, the amount of R&D invested, the degree of existing coordination/fragmentation and performance – and there is no straightforward linear relationship between these factors. The graph below shows the size of public funding, an assessment of the degree of coordination/fragmentation at European level, and the relative size of European public funding compared to the US for some S&T fields.

The graph is not exhaustive, but serves to illustrate that each S&T field is unique and requires its own tailored approach to Joint Programming, the development of which should be evidence-based and grounded in the strategic analysis of detailed information on respective S&T fields.

This will require the full involvement of Member States.



X-axis: This estimates the degree of coordination among Member State (MS) research programmes and of funding and institutional fragmentation, based on qualitative assessments from scientific publications, strategic reports, etc;

Y-axis: This presents the logarithmic ratio of public R&D investment in Europe (MS+European Commission (EC)) compared to US,

Size of bubbles: This is directly proportional to the amount of European public funding (MS+EC), based on New Cronos (e.g. GBAORD) and US government data as well as scientific publications.

Ideally, some research fields should have been further disaggregated. The biotechnology bubble, for example, should have been divided into health, industrial & environment and plant, animal and food. This was not always possible due to a lack of comparable data.

Why a new approach is required

To move forward, Europe needs to build upon its successes in cross-border public research, but it must also recognize and address the limits of existing approaches.

Some of Europe's greatest scientific success stories have involved cross-border pooling of public R&D funds. Various inter-governmental research organisations have emerged over the last 50 years, such as the European Organisation for Nuclear Research (CERN), the European Molecular Biology Laboratory (EMBL) and the European Space Agency (ESA). In the 1970s and 1980s, inter-governmental schemes like COST and EUREKA were launched, and the Framework Programme for Research was initiated. Bilateral agreements between Member States have multiplied. And, since 2005, the Community has launched some promising new instruments of coordination and collaboration such as the ERA-NET Scheme and Article 169 initiatives⁷.

However, the impact of these Community initiatives could have been larger if there would have been more overall strategic focus, more high-level political commitment on the part of Member States, more transparency on the national research systems, and less instrument rigidity. Increasing these initiatives, and the overall size of FP7, makes little sense if the lack of strategic programming between Member States is not addressed. Bilateral agreements between Member States as well as intergovernmental research organisations and schemes have a limited impact. While the Open Method of Coordination has allowed a fruitful exchange of ideas, it has not resulted in concrete national research policy coordination initiatives between Member States or in common agenda setting in areas of strategic importance.

However, there are lessons that can be learned from these recent Community initiatives to stimulate programme coordination and collaboration, and these can provide a vital basis for making progress in the field of Joint Programming.

There is now a unique opportunity to make a leap forward in pan-European research cooperation which could be as important as the creation of the Framework Programmes. Through this Communication, the Commission is seeking to facilitate the development of a solution by launching a strategic and structured process.

⁷ In this context, a more strategic approach, going beyond the current coordination of the several ERA-NET actions covering marine research is proposed in the foreseen Commission Communication "A Marine and Maritime Research Strategy for Europe", which will create concrete opportunities for joint programming.

Box 2: Joint Programming for addressing the ageing society

The increasing incidence of Alzheimer's disease and other forms of dementia is perhaps one of the most worrying signs of our ageing society. Alzheimer's disease is a degenerative disease which slowly and progressively destroys brain cells and affects memory, thinking, judgement and personality. In the long term, it often leads to additional problems such as mental confusion, speech impairment, sudden changes of mood and disorientation in time and space. About one person in 20 over the age of 65 suffers from dementia. The number of people in Europe with dementia – between 50 and 70 percent of whom suffer from Alzheimer's disease – is around 5.5 million, a number which for those over 60 is expected to increase to 10.7 million by 2040. Dementia-related healthcare costs already exceed 80 billion Euro in the EU. So far, there is no preventative or curative treatment for Alzheimer's disease. Yet European public support explicitly allocated to Alzheimer's research is dwarfed by the support in the US. Moreover, there is no major institutional driving force behind Alzheimer's research in Europe. Resources are split between numerous and diverse funding agencies spread over the 27 EU Member States. This creates the risk of wasteful duplication of research funding at EU level. Such a commonly faced problem calls for a common European effort to develop a common solution. In the US, the National Institute of Health and the National Institute on Aging are powerful institutional drivers of research into Alzheimer's disease. The question is what will Europe do to tackle this major societal challenge?

2. JOINT PROGRAMMING – WORKING TOGETHER TO TACKLE COMMON CHALLENGES MORE EFFECTIVELY

Joint Programming: The concept

Joint Programming involves Member States engaging voluntarily and on a variable-geometry basis in the definition, development and implementation of common strategic research agendas based on a common vision of how to address major societal challenges. It may involve strategic collaboration between existing national programmes or jointly planning and setting up entirely new ones. In both cases, it entails putting resources together, selecting or developing the most appropriate instrument(s), implementing, and collectively monitoring and reviewing progress. It aims to increase and improve the cross-border collaboration, coordination and integration of Member States' publicly funded research programmes in a limited number of strategic areas, and thus to help Europe boost the efficiency of its public research funding so as to better address major societal challenges.

Joint Programming: An ambitious structuring objective

- Joint Programming is concerned with changing the structure of the European research landscape. It is a comprehensive, long-term and strategic process, whose aim is to boost Europe's ability to address major economic and societal challenges the resolution of which depends critically on research. Joint Programming is about defining common visions and strategic research agendas, implementing them in the most appropriate manner, and achieving tangible societal impact. It sets clear and realistic targets and deliverables with a view to achieving major breakthroughs in the areas where it is deployed.
- Joint Programming is not a mere labelling exercise, where existing national research programmes addressing the same topic are simply re-grouped under a common title, or loosely coordinated and aligned. Nor is it about achieving a rigid division of labour between countries for the research activities in a particular field or about transferring national research budgets to Brussels. Joint Programming is about achieving structuring effects in order to increase the efficiency and impact of public research funding.
- However, stakeholders should be aware of what this involves. At its most ambitious, Joint Programming requires that Member States be prepared to move in the direction of the definition and implementation of common research agendas with multi-annual, commonly decided activities (planning, launching, evaluating) and funding mechanisms.

... with a pragmatic and flexible approach

- Joint Programming requires a new mindset in the Member States. Above all, it requires concrete commitments and actions by Member States and a rethinking and reorganisation of the way national research programmes are defined and implemented by refocusing them towards common objectives.
- That is why Joint Programming has to be a voluntary process based on the principle of variable geometry and open access. There is no need for all Member States to be involved in a specific Initiative, but the partners must be able between them to provide the required critical mass of resources.

- That is also why it is essential that Joint Programming employs a realistic and flexible approach and a step-by-step process (see chapter 3) in order to maximise its possible structuring effect and societal impact.
- Joint Programming does not involve Community funding a priori. It is first and foremost about Member States defining common strategies and putting together national resources. At the same time, it does not rule out the possibility of complementary Community funding depending on the added value, European dimension and possible structuring impact of the initiatives concerned.

The benefits of Joint Programming

Joint Programming will benefit Member States, European Research Programme managers, Europe's scientists and enterprise:

- Joint Programming makes it easier to address common challenges together, to develop common solutions and to speak with one voice in the international arena.
- It helps overcome barriers to entry, such as high start-up and operating costs in certain S&T fields.
- It helps to optimise the scope of research programmes across Europe, to eliminate wasteful cross-European programme duplication and to increase programme depth.
- It promotes scientific excellence through joint calls with common funding and peer review, which increase the competition for funds and raise the quality of research proposals.
- By supporting cross-border project collaboration, Joint Programming facilitates the pooling of data and expertise scattered across several countries or throughout Europe as a whole, enables the rapid dissemination of research results, promotes cross-border mobility and training of human resources, and increases the scientific, technological and innovative impacts of every Euro invested in public research.
- It helps to strengthen coordination with other related policies by virtue of greater programme visibility, reduces programme management costs, enables cross-border policy learning and improves the accountability and transparency of public research programmes.

The aforementioned benefits will also be of particular value for those regions and countries that are catching up in terms of research investment and performance. As a result of the important S&T benefits derived from Joint Programming and its significant structuring effects, Europe's citizens will benefit from stronger economic growth, greater competitiveness and higher employment, and from quicker and better solutions for social and environmental problems.

To further clarify these benefits, an example is given of what Joint Programming might contribute to the challenges posed by an ageing society (see Box 2). This example is purely illustrative and hypothetical, its sole objective being to make more concrete and visible the potential power and impact of Joint Programming as a mechanism for cross-border programme collaboration in strategic fields. A more detailed analysis of the potential of Joint Programming for other societal challenges and technology areas is given in the Commission staff working document accompanying this Communication.

3. MAKING JOINT PROGRAMMING OPERATIONAL

In this Communication, the Commission proposes a pragmatic methodology for achieving Joint Programming in a limited number of agreed areas. The process to identify these specific areas is described in the next chapter. This chapter 3 presents the methodology required to make it operational. It is based on experience with European Technology Platforms, but adapted to public research programmes. It involves different steps, in line with the life-cycle of research programmes, namely from programme definition via implementation to monitoring and evaluation.

Three stages can be identified:

1. Development of a common vision for the agreed area: This vision should set the longer-term objective(s), to be defined by authoritative experts in the field and politically endorsed. It would be developed on the basis of credible evidence (possibly including (joint) foresight activities) and broad stakeholder (public) consultations, in particular with the scientific and industrial communities. It could equally be based on a preliminary (joint) evaluation of existing programmes and capacities.

2. Once the vision has been established, it should be translated into a Strategic Research Agenda (SRA), entailing specific, measurable, achievable, realistic and time-based (SMART) objectives. The strategic research agenda should make the vision operational and link the implementation of the vision's objectives with existing competences in Europe or new ones to be developed. A good knowledge of existing programmes and competences across Europe (and beyond) will be essential.

3. Implementation of the SRA: All participating public authorities orient their programmes and funding to contribute in a coherent manner to the implementation of the SRA. The full tool box of public research instruments (National and regional research programmes, Intergovernmental research organisations and collaborative schemes, Research infrastructures, Mobility schemes...) should be explored and used to implement the individual Joint Programming Initiatives. The implementation may or may not include EU funding and instruments through the Framework Programme. Regular monitoring and evaluation of progress against the SMART objectives should be ensured, and its results reported to the political level.

Joint Programming could be made easier if a number of framework conditions are in place:

- Agreement on a number of shared principles and procedures for peer review ("the scientific rules of the game").
- Development of common methodologies for foresight activities and for joint evaluation of national or regional programmes or investments in specific areas of research.
- Definition of common principles for cross-border funding of research by national or regional authorities ("the financial rules of the game").
- Effective measures to ensure the protection of Intellectual Property Rights as well as to facilitate the dissemination and optimal use of research outputs.

4. A PROCESS FOR IDENTIFYING SPECIFIC AREAS FOR JOINT PROGRAMMING

As set out in this Communication, Joint Programming is about Member States developing common visions and Strategic Research Agendas, to address specific societal challenges.

As already stated, it is a voluntary process based on the principle of variable geometry and open access. However, in the framework of the wider Ljubljana Process, it makes sense for the EU institutions to play a role in its governance, while the ownership and responsibility of Member States must be emphasized. The Commission can act as a facilitator and will stand ready to offer assistance requested by Member States involved in Joint Programming Initiatives. It will also keep the Council informed of developments so that the latter can ensure effective monitoring and implementation. This will also ensure open access by keeping all Member States informed about Initiatives that are planned or underway so that they can join at any stage.

The Commission therefore:

- Invites the Council to endorse, by the end of 2008, the concept and objectives of Joint Programming.
- Invites the Council to ask Ministers to nominate high-level representatives to identify and motivate, by summer 2009, specific areas for Joint Programming, on the basis of clear criteria (see box 3) and stakeholder consultations. The Commission proposes to act as the secretariat of this group.
- Will submit for Council adoption by end 2009, Recommendations aimed at launching Joint Programming Initiatives in the specific areas identified by the high-level representatives. These Recommendations will include more detailed suggestions with respect to the governance and the implementation of Joint Programming Initiatives, taking into account feedback from the Council and from the Member States committed to participate in the individual Initiatives.
- Will initiate cooperation between interested organisations and authorities with a view to improving the framework conditions for Joint Programming.
- Invites the Council to oversee and regularly monitor progress of the Joint Programming Initiatives and, if necessary, consider further steps to ensure their effective implementation.

Box 3: Criteria for the identification of specific areas for Joint Programming

- The area addresses a pan-European/global socio-economic or environmental challenge;
- Publicly funded research is central to addressing the challenge;
- There is a clear added value in Joint Programming in the area, e.g. there is a need for publicly funded research of a scale and scope beyond the capabilities of individual Member States;
- The area is sufficiently focused so that clear and realistic objectives can be set.

In addition, a Joint Programming Initiative in a chosen area should:

- Contribute to overcoming fragmentation and wasteful duplication of publicly funded research, and contribute to more efficient and effective use of public resources;
- Involve the key public initiatives within the area, and have the full backing and commitment of the participating Member States